

The comparison between BeAGLE and E665

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Trigger model

❑ Scattered muon trigger (LAT):

For each charged muon (with $p_z < 0$), calculate:

$$\text{trigx} = 31.66\text{m} * p_x/p_z + 0.0283\text{ m} - q * 13.905\text{GeVm}/p_{xz}$$

$$\text{trigy} = -31.66\text{m} * p_y/p_z$$

where $q = \pm 1$ depending on the charge of the muon.

Keep events only if there is at least one muon with
 $p_z < 0 \ \&\& \ |x_{\text{trig}}| < 3.5\text{ m} \ \&\& \ |y_{\text{trig}}| < 1.5\text{m} \ \&\& \ (|x_{\text{trig}}| > 0.1\text{m} \ \vee \ |y_{\text{trig}}| > 0.1\text{m})$

❑ PCN trigger:

For each charged track ($q = \pm 1$, with $p_z < 0$), calculate:

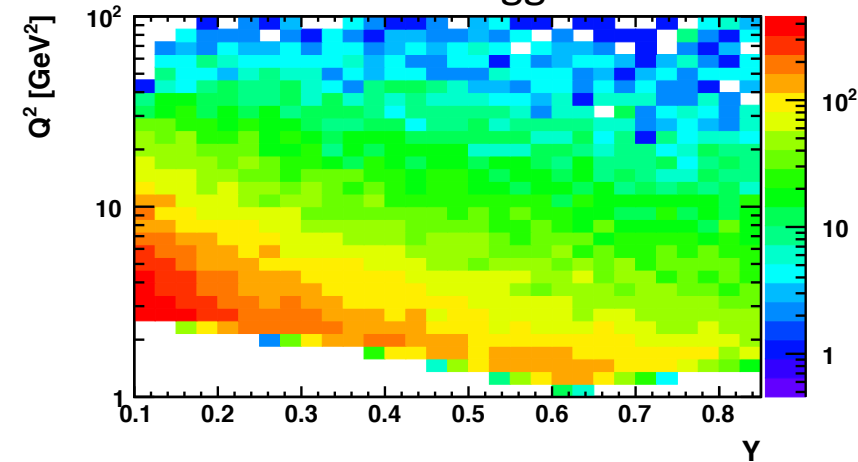
$$x_{\text{PC}} = 6.655\text{m} * p_x/p_z + 0.0049\text{m} + 5.352\text{ q GeVm}/p_{xz}$$

$$y_{\text{PC}} = -6.655\text{m} * p_y/p_z$$

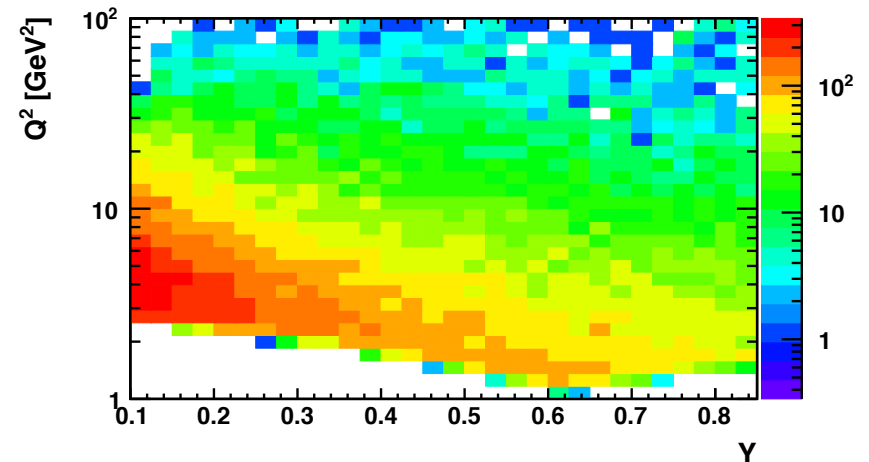
Keep events only if there are 2 or more charged tracks which satisfy:
 $p_z < 0 \ \&\& \ 0.096\text{m} < |x_{\text{PC}}| < 1.0\text{m} \ \&\& \ |y_{\text{PC}}| < 1.0\text{ m}$

LAT trigger efficiency

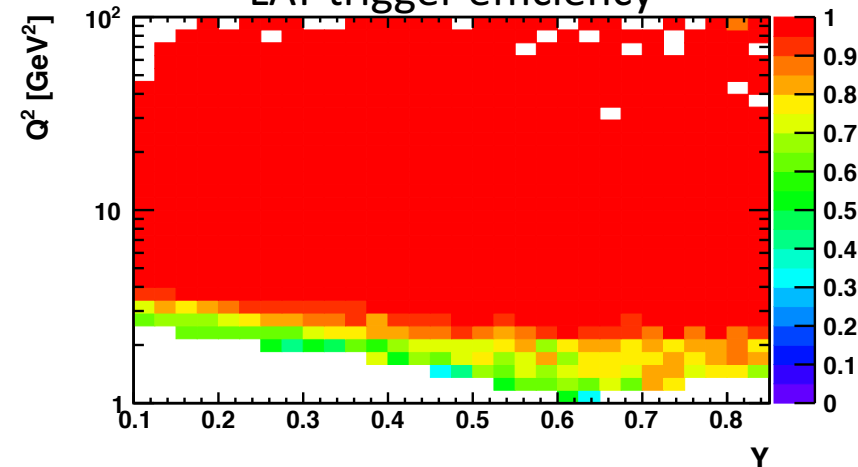
Without trigger



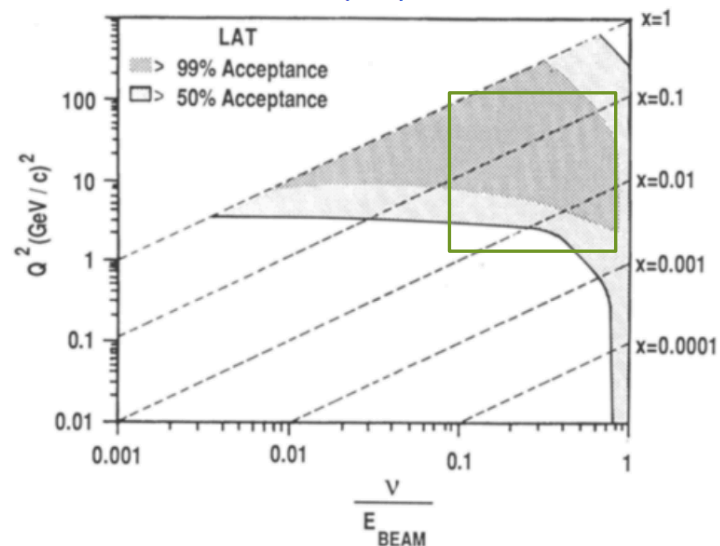
After LAT trigger



LAT trigger efficiency



E665, NIM A291 (1990) 533-551

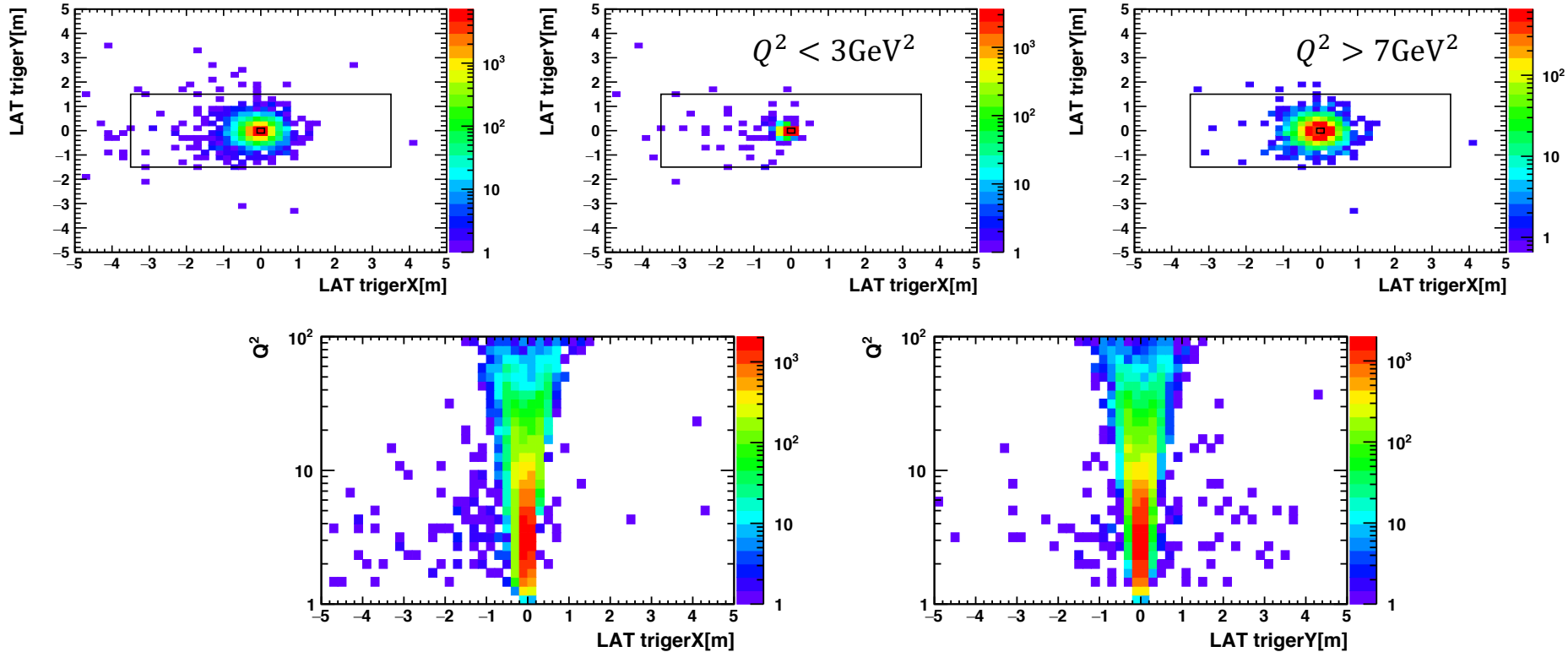


The efficiency of LAT trigger is qualified, It's similar with the NIM paper

LAT trigger

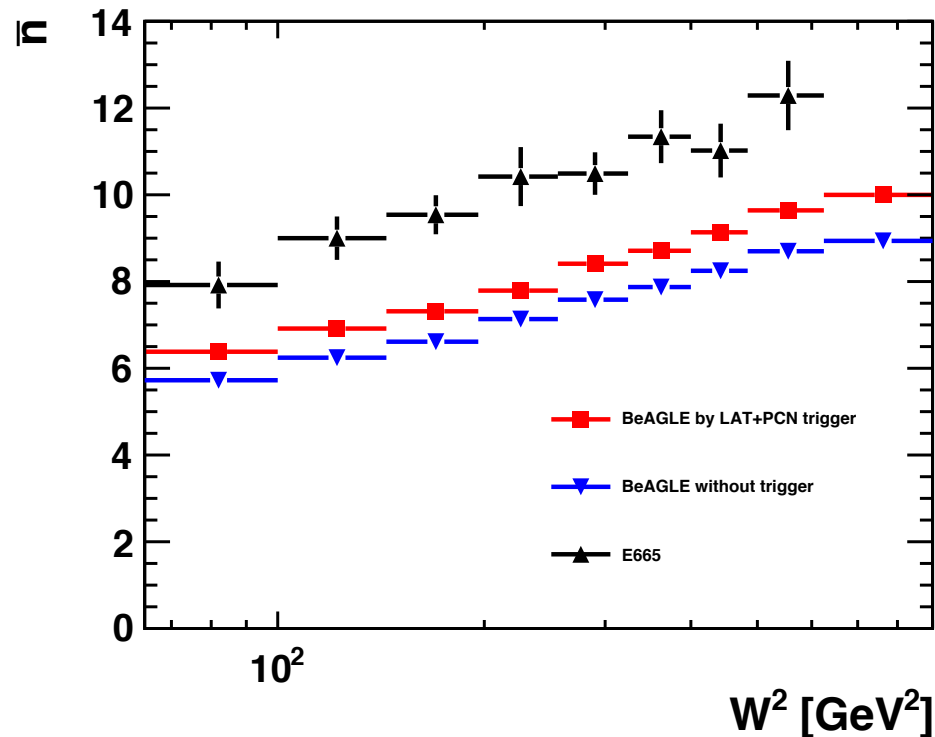
Keep events only if there is at least one muon with:

$|x_{\text{trig}}| < 3.5 \text{ m} \ \&\& \ |y_{\text{trig}}| < 1.5 \text{ m} \ \&\& (|x_{\text{trig}}| > 0.1 \text{ m} \ \vee \ |y_{\text{trig}}| > 0.1 \text{ m})$

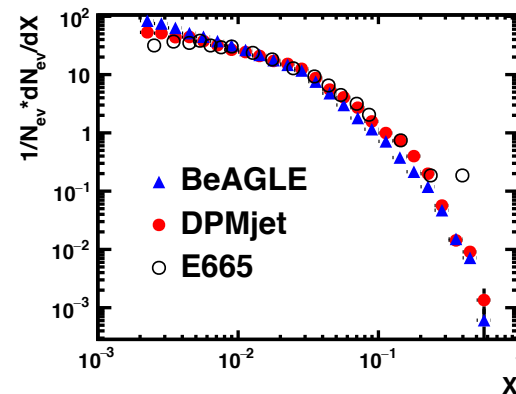
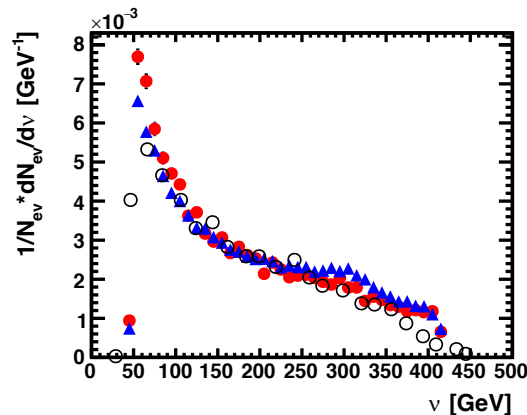
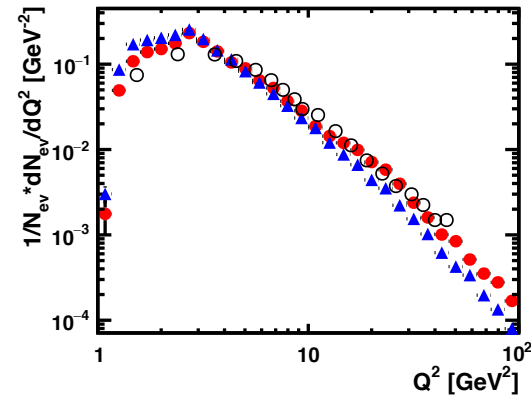
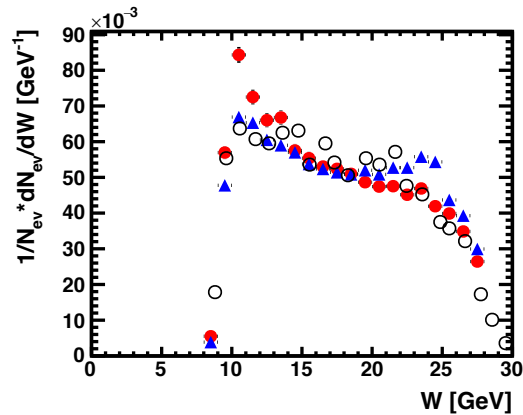


The events in high Q^2 region almost fully accept.

Multiplicity distribution with LAT+PCN trigger



\bar{n} is the average of multiplicity of charged hadron.
The trigger increase slightly the BeAGLE multiplicity.



This is WITHOUT trigger cuts, but with kinematic cuts (including $\theta > 3.5$ mrad). We expect to see DPMJET is really nonsense at high Q^2 . But I have no idea why it seems like agree with E665 (raw distribution) better than BeAGLE??



Back up

LAT trigger efficiency

